

Response to Arguments

1. Applicant's arguments filed 12/28/2009 have been fully considered but they are not persuasive.

Examiner's response:

2. Applicants argues regarding claim 33 that Glenn fails to disclose the claimed skirt portion positioned on the periphery area of the main surface of the light-receiving chip. The Examiner asserts that molded part 124 of Glenn corresponds to the claimed skirt portion. However, the alleged molded part 124 is not positioned on the periphery area of the main surface of the alleged light-receiving chip 106. The Examiner respectfully disagrees. The claim recites that "the main surface being made up of a light-receiving area on which the light-receiving cells are arranged and a periphery area surrounding the light-receiving area". Broadly, the periphery area comprises of all the area around the light receiving area 110 of image sensor 106. Therefore as shown in figure 2, the skirt portion 124 lies on the periphery of the main area.

3. Applicant argues that Glenn fails to disclose the claimed rib portion of the light receiving chip since the optical lid 120 (rib) is not a part of the light receiving chip. The Examiner respectfully disagrees. The claim recites that "the rib portion is attached onto a periphery of the transparent protection plate thereby forming a space between the light-receiving cells and the transparent protection plate (See figure 1 and 2)". Therefore the claim does not recite that the rib portion is a part of the light receiving chip. As clearly shown in figures 1 and 2, the rib portion 120 is attached onto a periphery of the transparent protection plate thereby forming a space between the light-receiving cells and the transparent protection plate.

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4. Applicant argues regarding claim 38 that Glenn fails to disclose that the claimed plurality of holes are provided through the transparent protection plate. The Examiner respectfully disagrees. The claim recites that the protection plate includes a plurality of terminal pads (104) formed on the other main surface that is different from the main surface. Therefore the traces 104 that are electrically connected to conductive vias 215 which extend from upper surface 102U to a lower surface 102L of the substrate (col. 10 lines 14-17, figure 2). Therefore as defined by the claim the transparent protection plate includes a plurality of terminal pads (104) formed on the other main surface that is different from the main surface and the holes 215 are connected to the traces 104. Therefore the holes are provided through the transparent protection plate.

5. Applicant argues that Glenn fails to disclose the claimed plurality of conductive foils attached to the main surface, a corresponding side surface, and the other main surface of the transparent protection plate. The Examiner asserts that vias 251A of Glenn correspond to the claimed plurality of conductive foils. However, the alleged conductive foils 251A are not provided on the alleged transparent protection plate 120, but are provided on and in substrate 102. In contrast, in claim 41, a plurality of conductive foils are attached to the main surface, a corresponding side surface, and the other main surface of the transparent protection plate. The Examiner respectfully disagrees. The claim recites that the protection plate includes a plurality of terminal pads (104) formed on the other main surface that is different from the main surface. Therefore the traces 104 that are electrically connected to conductive foils 215A which extend from upper surface 102U to a lower surface 102L of the substrate (col. 10 lines 14-17, figure 2). Therefore as defined by the claim the transparent protection plate includes a plurality of terminal pads (104) formed on the other main surface that is different from the main surface and the foils

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215 are connected to the traces 104. Therefore the holes are provided through the transparent protection plate.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 33-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Glenn et al. (US Patent # 6,266,197).

[Claim 33]

A solid-state imaging apparatus (figures 1 and 2) being one of pieces diced from an assembly, the solid-state imaging apparatus comprising:

a light-receiving chip (106) having a plurality of light-receiving cells arranged either one dimensionally or two dimensionally on one main surface of a base substrate, the main surface being made up of a light-receiving area (110) on which the light-receiving cells are arranged and a periphery area surrounding the light-receiving area (col. 9 lines 48-60, col. 10 lines 1-6); and

a transparent protection plate (120), at least a part thereof (122) that corresponds to the light-receiving area being transparent (col. 11 lines 4-11), wherein

the transparent protection plate has a skirt portion (124, molded part) at a periphery thereof (col. 7 lines 17-21, figures 1 and 2),

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the skirt portion is positioned on the periphery area of the main surface thereby forming a space between the light-receiving cells and the transparent protection plate (col. 7 lines 17-21, figures 1 and 2), and

the assembly is comprised of two layers (figure 1 shows two layers), the two layers being a sheet of transparent protection plates (120) and a semiconductor wafer of light-receiving chips (102) that are attached to each other such that each transparent protection plate is combined with a corresponding light-receiving chip, and the diced pieces have such diced edges that result by cutting the two layers simultaneously (col. 1 lines 1-65).

[Claim 34]

The solid-state imaging apparatus of Claim 33, wherein the skirt portion is formed by plating metal on the periphery of the transparent protection plate that is a flat plate made of glass or resin.

[Claim 35]

The solid-state imaging apparatus of Claim 33, wherein the transparent protection plate (124) is a flat plate made of resin (col. 13 lines 53-col. 14 line 5), and the skirt portion is formed by pressing the flat resin plate.

[Claim 36]

A solid-state imaging apparatus (figures 1 and 2) being one of pieces diced from an assembly, the solid-state imaging apparatus comprising:

a light-receiving chip (106) having a plurality of light-receiving cells arranged either one dimensionally or two dimensionally on one main surface of a base substrate, the main surface

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being made up of a light-receiving area (110) on which the light-receiving cells are arranged and a periphery area surrounding the light-receiving area (col. 9 lines 48-60, col. 10 lines 1-6); and a transparent protection plate (120), at least a part thereof (122) that corresponds to the light-receiving area being transparent (col. 11 lines 4-11), wherein,

the light-receiving chip has, on the periphery area of the main surface, a rib portion having a loop shape (120),

the rib portion is attached onto a periphery of the transparent protection plate thereby forming a space between the light-receiving cells and the transparent protection plate (See figure 1 and 2), and

the assembly is comprised of two layers (figure 1 shows two layers), the two layers being a sheet of transparent protection plates (120) and a semiconductor wafer of light-receiving chips (102) that are attached to each other such that each transparent protection plate is combined with a corresponding light-receiving chip, and the diced pieces have such diced edges that result by cutting the two layers simultaneously (col. 1 lines 1-65)

[Claim 37]

The solid-state imaging apparatus of Claim 36, wherein the rib portion is an insulator made of a material for protective foil (col. 11 lines 56-col. 12 line 9, resin is an insulator).

[Claim 38]

A solid-state imaging apparatus (figures 1 and 2) being one of pieces diced from an assembly, the solid-state imaging apparatus comprising:

a light-receiving chip (106) having a plurality of light-receiving cells arranged either one dimensionally or two dimensionally on one main surface of a base substrate, the main surface

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being made up of a light-receiving area (110) on which the light-receiving cells are arranged and a periphery area surrounding the light-receiving area (col. 9 lines 48-60, col. 10 lines 1-6); wherein, a plurality of electrodes (bond pads 112) being provided outside the light-receiving area (figures 1 and 2); and

a transparent protection plate (120), at least a part thereof (122) that corresponds to the light-receiving area being transparent (col. 11 lines 4-11), wherein

the transparent protection plate includes: a plurality of terminal pads (104) formed on the other main surface that is different from the main surface,

a plurality of holes (215) are provided through the transparent protection plate, each hole electrically connecting one of the electrodes with a corresponding one of the terminal pads (see figure 2), and

the assembly is comprised of two layers (figure 1 shows two layers), the two layers being a sheet of transparent protection plates (120) and a semiconductor wafer of light-receiving chips (102) that are attached to each other such that each transparent protection plate is combined with a corresponding light-receiving chip, and the diced pieces have such diced edges that result by cutting the two layers simultaneously (col. 1 lines 1-65).

[Claim 42]

The rib portion (124, that is a part of 120) is produced on the periphery area of the main surface, by a semiconductor producing process (col. 6 lines 37-49).

[Claim 43]

Glenn teaches wherein the skirt portion is formed of a sealing material (portion 126 is an adhesive layer that is read as part of the skirt portion).

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Allowable Subject Matter

8. Claims 44 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH K. AGGARWAL whose telephone number is (571)272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Yogesh K Aggarwal/
Primary Examiner, Art Unit 2622